

MURDOCH (J. B.)

REPORTS FROM HOSPITALS.

SURGICAL CLINICS AT THE WESTERN PENNSYLVANIA HOSPITAL BEFORE THE STUDENTS OF THE WEST- ERN PENNSYLVANIA MEDI- CAL COLLEGE.

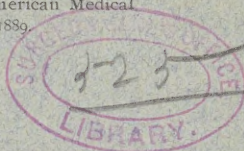
BY

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ating Class.]

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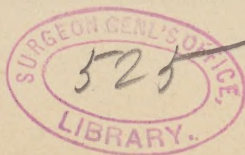


SURGICAL CLINICS AT THE WESTERN
PENNSYLVANIA HOSPITAL BEFORE
THE STUDENTS OF THE WEST-
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CAL COLLEGE.

September 29, 1888.

EXCISION OF KNEE-JOINT.

Patient, æt. 47, male, and by occupation a coal miner, has always enjoyed good health and is at present in robust condition. His parents were healthy; his father died at the age of 56 years, and his mother is still living. Three years ago, while at his work in the mines at Mansfield, a fall of coal caught his knee, crushing it slightly, but not severely, as he kept on at his work for a month, at which time, however, his knee began to trouble him so much he was compelled to take to his bed, which he kept for three days, when he again resumed work, but only for a short time, when he was again compelled to go to bed for a few days; and so he has alternately worked and lain in bed for the past three years, until within a short time, when he became unable to work or even to stand on his leg. Upon examination I find that the mischief has so involved the joint that the articulating surfaces, cartilages, ligaments and the joint generally, has become so thoroughly disorganized as to require a surgical operation. There are two operations we may do for this man, namely: am-



putation of the limb or excision of the joint. The latter is a substitute for the former, and is resorted to in disease, injury and deformity of joints; and where it is applicable the mortality following it should govern us largely in attempting it. A few years ago good surgeons had almost abandoned it, so great had been the mortality following it.

Of 57 cases recorded during the late war, 44 died, 10 recovered, and 3 are unaccounted for; but since the advent of antiseptic treatment of wounds results have changed materially. I have done five excisions in the past three years, with but one death, that of a delicate child, while my friend Prof. King has done five excisions in the same length of time with no deaths. The object in view in excision of the knee-joint is different from that in the elbow, shoulder, wrist, hip, ankle or almost any other joint. In almost every other joint, we hope to get motion after excision, in the knee we do not; in fact, we make every effort to get a stiff joint, we endeavor to destroy the joint as a joint, and to that end we fix the bones solidly together with nails, destroy the synovial pouch and membranes, and hope thereby to get strength at the expense of motion.

In doing this operation we will make an incision extending from opposite the external condyle of the femur, across the centre of the patella to opposite the internal condyle of the femur, about three-fourths of the circumference of the limb, and carry the incision deeply through all the tissues down to the ligaments; we then dissect up the skin, flex the limb and remove the patella, and all the diseased tissue surrounding the joint. After this we saw a thin piece off the end of the femur and a thin piece off the end of the tibia, taking care not to remove the entire epiphysis in any case. As the normal leg is not straight, it

shall be our endeavor to remove the ends of the tibia and femur in such a line to the axis of the leg, that when the two sawed surfaces are brought into position the natural bend of the leg shall be maintained. After the nails are put in place and the drill removed, a tap or two on the head of each nail with the mallet serves to fasten them up and to draw the two surfaces into closer apposition. In addition to the nails a posterior splint will be put on, also a plaster dressing will be put on over the whole; all of which will help hold the joint immovable. Several drainage tubes having been put in, small fenestra will be cut in the plaster dressing in order that the tubes may be removed without disturbing the limb, which will be done in about one week. The dressing will not be removed for about two weeks unless pain or rise in temperature indicate that all is not doing well. The nails will be withdrawn in about three weeks, and if all goes well this man should be able to move about on crutches in about four weeks.

October 27, 1888.

We will show you first, to-day, the man on whom we excised the knee-joint just four weeks ago. You see that he is able to walk about on crutches, and you will also notice that he looks much better, physically, than he did on the day of the operation. One week ago I removed the nails, and failed to find one drop of pus in the wound, or in the track of the nails. You also see when I manipulate the limb, that the joint is firmly ankylosed, showing that complete bony union has taken place. Now, that is just the result we sought to obtain, and it is the result we have a right to expect if our operation has been properly done, and our antiseptic precautions

have been properly observed. This man has been thoroughly incapacitated for work for four years, and now he has the pleasure of knowing that he will soon be able to resume his occupation, with a considerable degree of satisfaction. He is 47 years old, an age at which we should scarcely expect as favorable results as we have been able to obtain in this case. On the evening of the day of the operation, his temperature went up to 101.6° , but since that time has remained below that, much of the time being normal.

October 13, 1888.

FRACTURE OF THE SKULL.

Through the courtesy of Dr. Hyatt we are enabled to show you the case of a young man, who one week ago sustained a severe fracture of the skull. This man is 25 years old, and works in a machine shop. One week ago, while at his work, he was struck by a falling beam, receiving, as you see, this extensive stellate fracture of the skull, just over the left parietal bone. And extensive as this wound is, and considering the fact that pieces of bone were driven down into the substance of the brain, this man walked down three flights of stairs, rode to the hospital in an ambulance, and got out and walked into the ward without for a moment losing consciousness. This fact will serve to teach you that men may receive very extensive fractures of the skull, and still retain consciousness. After this accident, Dr. Hyatt trephined the skull, removing the detached portions of bone, and elevating the depressed portions, observing through all his manipulations strict antiseptic precautions; and today his chart shows a temperature of 99.6° , and at no time did it exceed 99.8° . Now, this would be

almost an impossible state of affairs under any other than antiseptic treatment. Under the old forms of treatment of injuries like this, we would, in all probability, by this time have this patient in an aggravated form of septic fever.

We will now remove the dressings in order to get at the drainage tube, which has now served its purpose and will be removed. This will be done as strictly antiseptically as the original operation. The skull is an exceedingly difficult location on which to do antiseptic surgery, on account of the hair, which gets very filthy. When you want to do a clean operation on the skull always shave the hair off close to the skin. Heretofore not a little trouble has been experienced in elevating the internal table of the skull, on account of its friability and proneness to break down under instruments, but my friend Prof. Brazier, of Wooster University, has invented an instrument which overcomes this difficulty. He has promised to send me one of them, which, when he does so, will be exhibited to you. The opening left here by the trephine will not be closed by a silver or glass plate, as so many people think, but will be left to nature to close, and which she will close; not by bone, but by a thick, fibrous membrane, leaving a soft spot, which will always remain over the site of the wound. In a case of this kind, not much can be done by medication. I, however, always give a cathartic, a brisk, hydragogue cathartic, which partly takes the place of the old style of bleeding. This young man has had this.

FRACTURE OF THE PATELLA.

We have here another patient, one who has a fracture of the patella. A few days ago, while trying to board a moving train, he was thrown violently against an upright signal pole, and has

sustained a transverse fracture of the patella, which is a rare occurrence. Fractures of the patella may be caused by direct violence, and by muscular action, and when it is caused by direct violence, it is almost always in an oblique, vertical or stellate fracture. When it is fractured in a transverse direction, it is almost always done by muscular action, as when a person is about to fall, or be thrown down, in his violent effort to prevent his falling, and when his knee is in a semiflexed position, his patella is fractured in a transverse direction, by the violent contractions of the strong muscles of his thigh opposed by the ligamentum patella below, much the same as you would break a stick by pulling it over your knee with a hand on either end. But in this case you see a transverse fracture caused by direct violence. This is merely an exception to the rule. This is also a complete fracture, the parts being separated from $1\frac{1}{2}$ to 2 inches, and as you see, the limb is very much swollen or puffed up by the accumulation of fluid in the joint. Now, it is very desirable that this fluid should be disposed of before we try to bring the parts together, and in order to do this, some surgeons recommend the aspirator. In this case, however, we will try milder means. First we will place a bladder filled with broken ice about the joint, and follow this with a couple of large blisters, and if this do not effect the desired result, the aspirator will then be used. Now, there are two ways of bringing the fractured ends of the patella together: first by plasters, one strip being passed around below the lower part, and strongly drawn upward and made to adhere to the skin of the thigh above the knee; another strip is passed around the upper fragment and strongly drawn down, and made to adhere below the knee. The limb must lay on its posterior aspect, and

perfectly relaxed, and then, by manipulations and flexing the thigh upon the pelvis and extending the leg, the fractured ends may be brought very nearly into approximation; always remembering, however, that the upper part must be drawn down, and that the lower part cannot be drawn up, as the ligamentum patella is not elastic. The other way of reducing this fracture is to cut down on to the bone, freshen the two fractured surfaces, pass strong wires through each, draw them together, twist the wires, and so retain them in apposition until union takes place. This latter process is attended by so much danger that it is not often resorted to. Patients have lost their lives as a result of it, and many have suffered amputation. In either of these operations we can hardly hope for bony union; some surgeons claim to get bony union in favorable cases, but it has been claimed by just as good authority that bony union never takes place in these cases. The fibrous union which we do get, however, is as good for all practical purposes as bony union would be, while some claim that it is better than bony union would be, if we did get it, as the patella will never break again at the same place after fibrous union has taken place.

October 6, 1888.

EXCISION OF THE KNEE-JOINT.

We show you to-day the patient on whom we did the excision of the knee-joint one week ago to-day. The dressings have not been disturbed since, and we bring him in here to re-dress his wound, that you may learn the *modus operandi* of changing the dressings of wounds. Now, in doing this, all the antiseptic precautions will be observed that were observed in the original operation. A wound like this is different from one

made by the surgeon's knife. You remember this joint was a foul suppurating cavity, filled with pus. The poisonous germs were already there in great profusion. A wound made in sound tissue, by a surgeon's knife, if he be careful, may never become septic; the poisonous germs may never secure a lodgment in it, and it is in wounds like this before us that we frequently fail, because we are not careful enough in our management of them. Now that the dressing is removed from this wound, you see no evidence of suppuration in it; these drainage tubes which have been in for a week are perfectly clean, so that we are not likely to fail in this case at least. These dressings might have been allowed to remain on for three weeks had it not been necessary to remove the drainage tubes. After a drainage tube has remained in a wound three or four days it has accomplished its purpose, and becomes foreign matter, and should be removed. In dressing a wound do not lay the first cloths or gauze on in straight flat layers, but rather loose, fluffy, or bunchy; it absorbs much better than when laid flat. We next apply absorbent cotton and dress as before, taking care to apply enough absorbents to take up all the blood and serum that may exude. Whenever the discharge begins to show itself through the dressings, they should be removed at once, and the defect remedied. This man will now be returned to bed and his dressings will not be disturbed again for two weeks; unless pain or rise in temperature indicate that mischief is going on in the wound. You can see by his temperature chart that on the day of the operation his temperature rose to $101\frac{3}{5}^{\circ}$, and the next morning it had fallen to 99° , and in the evening arose to 101° . Since that time it has remained below 100° . You will see more of this man later on.

ENLARGEMENT OF THE SCROTUM.

We have here another case which we will show you, a case of enlargement of the scrotum. Now there are various causes for enlargement of the scrotum, or many things that may be the cause of this state of affairs, and chief among them is hernia, which it is important to diagnose at once, when it is present ; and in order to show you how to do it we will make a list of the conditions that might cause this enlargement. The following are some such conditions: Varicocele, hydrocele, enlarged testicle, hernia, orchitis, epididymitis, cystic disease, cancer, tubercle.

Now, varicocele is diagnosed by a peculiar knotty feeling of the contents of the scrotum, likened by somebody to the feel of a handful of fishworms. As I do not find any such feeling here, I erase varicocele. Hydrocele is diagnosed by its symmetrical, ovoid shape, and a translucency when held before a strong light ; as these points are absent, we erase hydrocele. And as I can easily detect both testicles, and as they are of normal size and consistency, we exclude enlarged testicle, with all its causes. Now that all the other causes have been eliminated, we have diagnosed hernia, and as I can trace the mass up the inguinal canal to the internal ring, our diagnosis is verified. This is called differential diagnosis. This man was sent here for operation, and we had hoped to be able to do the operation for the radical cure of hernia, in your presence to-day ; but since he has been in the hospital he refuses to have an operation performed, and in this country when a patient refuses to have an operation performed we dare not do it, even if the country has to support the patient.

In the operation for the radical cure of hernia

an incision is made from the internal abdominal ring down, well on to the scrotum; the protruded parts are returned to the abdominal cavity; a purse-string, catgut ligature is passed around the neck of the sac, which is then cut off and removed; the stump is placed within the abdomen and the internal ring closed with sutures. This is the operation in outline, and it is usually successful.

DOUBLE FRACTURE OF THE FEMUR.

Here is another poor man from Coal Bluff. While at his work in the mines last night a large amount of coal fell on him, injuring him, but how severely we know not, as we have not examined him yet, but will proceed to do so at once. You observe as he lays on his back that both limbs are everted, and some deformity above the left knee. Measurement in this case can afford us no information, because, both limbs being injured, we have no data from which to calculate. I will therefore raise the right limb, and by manipulating it I find a false point of motion about the middle of the right femur, which is plainly visible to you all, and although I fail completely to obtain crepitus, I still have sufficient evidence on which to base a diagnosis of fracture of the femur. Now, in manipulating the left leg, I am able to find a false point of motion, and to elicit crepitus, just above the condyles of the knee. We therefore have a double fracture of the femurs in this case; the fact that we get crepitus in the one case and not in the other, can be explained by the fact that in some fractures the bones glide past, or overlap each other, which is the case here. This overlapping is caused by the contraction of the muscles, which is sometimes overcome with great difficulty, and sometimes is never overcome. In regard to the treatment of fractures of the fe-

mur, you all know that formerly there was a great variety, but the almost universal method now of treatment is by extension and counter-extension; this, in old times, was accomplished by a long splint, and a perineal band. The perineal band was a great annoyance to the patient, for in passing around the perinæum it almost always irritated the parts, causing numerous ulcerations and sores.

In these days, and in this institution, extension is made by the weight and pulley, which represents the extension, and by raising the foot of the bed we get the counter-extension. This raising of the foot of the bed to get counter-extension has done away with the perineal band; it has also done away with a world of suffering for the patient. This is an American invention, and simple as it may seem it is entitled to considerable praise in the treatment of fractures of the femur. The use of plasters for attaching the weight to the leg is also an American invention. And I may say right here, that to American surgeons is due the honor for more inventions, and better appliances in the treatment of fractures, than to the surgeons of any country on the face of the globe. As the skin is intact in this case we need not be so careful to observe antiseptic measures as we would were the skin broken. The probabilities are that this man will be one-fourth to one-half inch shorter than he was before this accident, as it is hardly possible that the strong femoral muscles can be drawn out to their full length; and I would say here, that it is always well to thoroughly anæsthetise the patient before trying to do this; for the double purpose of relieving the pain, and relaxing the muscle. There are always three things necessary in the treatment of fractures of the femur, viz: Exten-

sion and counter-extension, and the holding of the parts in position, or the preventing of the foot from becoming everted. The two former indications have been explained to you, and the latter is obtained in various ways; some surgeons lay a sand bag along the outer side of the leg, and to obtain the same result we use the splint, invented by Dr. Frank Hamilton, of New York (an American surgeon, too, by-the-way).

When plasters are applied directly to the skin, the mole-skin plaster should always be used, as the ordinary rubber plaster usually blisters the skin. When plasters are made to encircle a limb, they should be cut, or divided at one or more points, so as not to constrict or strangulate the circulation of the limb; and where it can be avoided, plasters should not be put in contact with the maleoli, as they are likely to irritate them. For the left leg I will use a Volkmann's slide, which is a somewhat different apparatus, as you see, and one which I have used a great many times, and with good satisfaction generally. For the first few days a weight of about eight pounds will be heavy enough for this limb; after that it may bear twelve to fifteen pounds, and I have used as high as twenty-eight pounds; however, this is about the extreme, about twelve pounds being the average.

Now as to the bed. The bed for this man should be flat, and hard, a hair matrass being about the best, and he will have to lay on his back for several weeks. I find on examination that besides the fracture of both femurs this man has also a fracture of the clavicle on the right side; and now as the best treatment for a fracture of the clavicle is the recumbent position, on the back, in bed, and as this man is compelled to assume just this position for some time, no other

treatment will be required for his fractured clavicle. In cases where more than this is required a compress may be placed on the back between the scapulæ, and the weight of the shoulders will usually be sufficient to bring the fragments into apposition; if not, bags of shot may be laid on each shoulder to further increase their weight. This man will now be removed to the ward, and those of the students who wish may go to the ward and see the weight and pulleys applied.

FRACTURE OF THE CLAVICLE.

The next case we will show you is that of fracture of the clavicle, and as you are now studying fractures, this is a case that I am very glad to have to show you to-day. As you know, fracture of the clavicle occurs from violence, direct or indirect, and this is one occurring from indirect violence. This man fell from a scaffold yesterday morning, and lay unconscious till last night, when it was found that he had sustained this injury, together with other bruises and contusions about his body. As he stands before you now you will notice some deformity; the left shoulder droops, or hangs lower than the right, and in measuring from the sternal notch to the acromion process on the left side, I find that it measures $9\frac{1}{2}$ inches, and on the right side $10\frac{1}{2}$ inches, and, as you can see, the left shoulder also approaches the median line. This is caused by the fractured ends of the left clavicle slipping past, or overlapping each other. These signs, of themselves, would be sufficient for diagnosis, but besides these we have pain, loss of function, false point of motion, history of the accident, and might, if we tried, be able to elicit crepitus; so you see the diagnosis is easy enough in this case. Now the indications for treatment in this case, as

indeed in all cases of fracture of the clavicle, are to raise the shoulder up and draw it backward, which is easiest done by confining the patient to bed on his back, with a compress between his scapulæ. But patients will not always submit to this treatment; so other arrangements must be made. In this case I will make use of Dr. Sayre's apparatus, which is simple, always obtainable, and easy of application. It consists first of a pad in the axilla of the injured side, then sew a strip of adhesive plaster about four inches wide, around the arm, draw the elbow to the side of the chest and backward, by passing the adhesive plaster around the back to the opposite side. Then place the hand of the injured side on the sound shoulder, take another adhesive strip, four inches wide and four feet long, cut a small slit in the centre, place the elbow in the slit in the centre, and pass the two ends up to meet on top of the sound shoulder. The anterior end will cover the forearm of the injured side, and retain the hand of the injured side on the sound shoulder. These strips should act as a sling, to raise the injured shoulder and support it in place. Two skin surfaces should never be allowed to remain in contact, so I will place cotton batting between the arm and the breast. This constitutes Dr. Sayre's dressing for fractured clavicle. Where you are not prepared with plasters to put on this dressing, you may make a very good substitute by making an ordinary four-tailed bandage with a slit in the centre, in which you will place the elbow; then pass two of the tails around the body, confining the elbow to the side, over a pad in the axilla, pass the two remaining tails up over the sound shoulder, drawing it well up, supporting the injured arm. This makes a very good and a very cheap dressing, and fulfils all of the

indications for which such dressings are applied. The clavicle is broken oftener than any other bone in the body, and, as in this case, almost always by indirect violence. The weight of the body at one end and the ground at the other, are usually the two forces acting upon the bone, which fractures at its weakest point, which is usually at the junction of the middle with the outer third. This accident frequently happens to babes and small children, from falling from their carriages and chairs. In children it is not a very formidable accident, as it usually heals kindly.

FISTULA IN ANO.

Through the courtesy of Professor McCann, we have another case to show you. It is one of fistula in ano. We place him at once in the lithotomy position, as you see, and the opening is at once exposed to view. A fistula, as you know, may be complete or incomplete. A complete fistula is one with two openings; one external, and one internal opening into the rectum. An incomplete fistula is one with but a single opening, and it may be either internal or external. I will try to pass a grooved director through this opening. In doing this you should always remember that we frequently fail to find the internal opening, and that this is frequently because we search too high up. As you see, I find the internal opening just inside the sphincter, and this is the location where it is usually found. I will incise the part that lies over the director, which constitutes the operation. The wound will now be dressed with iodoform gauze, and the patient kept quiet in bed for a few days, and an effort made to make the wound heal from the bottom.

FRACTURE OF BOTH FEMURS.

We have one more case to show you to-day ; that on which I dressed a fracture of each femur three weeks ago. You see we already have a considerable amount of union here, as the man can roll both legs in either direction. I will now do what I would advise you all to do under like circumstances, viz.: to apply a plaster of Paris dressing. Up until within a year or two ago it was my rule to treat fractures of the femur with plaster of Paris bandage from the beginning, but I have about abandoned that practice here for the reason that it interferes with making extension, and also because, after plaster is applied, every part of the wound is completely concealed from view, and we cannot readily ascertain the amount of progress being made by the reparative process, or whether the bones remain in apposition or not. For these, together with other reasons, we do not put on a plaster dressing until after slight union has taken place. There are various ways of applying this dressing. The plaster should not come in contact with the skin, and to prevent it we use various articles, as blankets, cotton batting, Canton flannel, or tight-fitting drawers, but for fractures below the knee, I prefer an ordinary stocking. In applying plaster dressings all bony prominences must be carefully protected by a layer or two of cotton batting. The points to be especially protected are the condyles of the femur, the spine of the tibia, and the malleoli. At the point of fracture reinforcements should be made by a few extra wraps of the plaster bandage. In the groin also, where counter-extension is to be made, we must be careful to protect the parts with cotton. We then start at the foot, and apply the bandage smoothly and evenly the entire length of the leg, making extra wraps at the point of fracture.

October 20, 1888.

OPERATION ON A FROST-BITTEN FOOT.

We have here a patient who has had his foot frost-bitten, from which he has lost one toe by amputation, and another one has fallen off, leaving a large and very painful cicatrix. It is not many years since surgeons amputated the leg for injuries involving only the foot. It is not over fifty years since the distinguished French surgeon Velpeau advised amputation at the point of election, as it was called, for such injuries. The point of election was a point about a hand's breadth below the knee. This I suppose was owing to the fact that artificial limbs were not so well known or so much used as they are to-day, and because they only had such artificial limbs as they could use by resting the knee in a flexed position on a wooden one, allowing the stump to protrude behind. But since those days about twenty-seven different amputations have been done between the toes and the ankle-joint, chief among them being those of Hay, Chopart and Syme.

Mr. Hay's amputation is that done between the tarsal and metatarsal bones, while Mr. Chopart's amputation separates the tarsal bones, and hence is sometimes called the medio-tarsal operation. Mr. Symes' operation is done at the ankle-joint. Now all of these are good operations, but the proper operation must be adapted to the proper case ; it would not be a right thing to do a Chopart's operation if a Hay's would answer as well, nor would it be proper to do a Symes' if a Chopart's operation would do as well, and if in a given case you can do a better operation than either of them there is no reason why you should follow any of them. They all have their disadvantages as well as advantages. In Chopart's amputation one dis-

advantage, in the eyes of many surgeons, is that all of the muscles of the anterior part of the leg are severed, thus leaving no antagonist to the action of the gastrocnemius muscle, which, by contracting, raises the heel from the floor, turning the top of the foot down, causing the patient to walk on the cicatrix. I only advise this operation where you can get a long plantar flap and need no dorsal flap. Another objection is that the arches of the foot are destroyed, and consequently the spring and elasticity is gone. Some one has said that if the tread of the foot is lost that the amputation had better be made at the ankle-joint, because the patient must limp in any case, and that he will be able to do better work by losing the entire foot.

This is not my advice. My rule is always to save as much of the foot as I possibly can. You will find that the mortality will be less in so doing. In the case before you I will follow no particular rule, I will reflect a superior and an inferior flap, and saw the metatarsal bones off as near the metatarsophalangeal articulation as possible. In studying anatomy many students study arteries, muscles and nerves and throw away the remainder, but the man who does not understand the ligaments, nor appreciate the arches of the foot, will never make an orthopedic surgeon. True, he may be able to do some mechanical operations, but he will never understand the causes of malformations or deformities of the foot. As I remove the Es-march's bandage I am sorry to say that I see little or no bleeding from the wound. It is a good sign to have more or less bleeding from a wound, it shows that there is vitality there, and it is evidence that there will be repair of the wound. In this, as in all other cases where practicable, I use torsion to control hæmorrhage, so that I am cer-

tain that I leave no foreign substance in the wound.

Where ligatures must be used catgut is better than silk, as it is an animal substance and is readily absorbed. It is nevertheless foreign matter, and a very prolific source of septicæmia, as it is very hard to render it aseptic and keep it so. In all cases where an Esmarch's bandage has been used there will be more or less oozing from the capillaries, and the limb should be kept elevated for from one to four hours. The oozing will cease much sooner than if it were left in a horizontal posture. A drainage-tube should also always be used, as a collection of blood and serum may create wound tension and interfere materially with repair. In about one week the drainage-tube will have served its purpose and should be removed, otherwise it becomes a foreign substance in the wound, with all that that implies.

November 3, 1888.

OPERATION ON THE ARM FOR A STAB-WOUND MADE THIRTY YEARS AGO.

We have here another case, that of a man 76 years old. He was injured in a fight thirty years ago, by the stab of a knife, the point entering the elbow-joint from behind. Since that time he has suffered almost continual pain, and it is partly to relieve this pain that we do an operation on his arm to-day. You see the joint is partially ankylosed, swollen, and deformed from chronic synovitis. I will use an Esmarch's bandage on this arm.

I do not know what may be required here until I open the joint, but I will begin as though I were going to excise the joint. We make an incision 4 inches long on the posterior aspect of the arm

and parallel with it. Two-thirds of the incision will be made over the olecranon process and one-third over the base of the humerus, clear down to the bones. The heads of the bones are then dissected out, care being taken not to injure the ulnar nerve, which lies between the olecranon process and the inner condyle of the humerus. We guard against injuring this nerve by keeping the edge of the knife close to the bone. I will remove the olecranon process with the saw and the diseased cartilage with a scraper. As I do this, however, I meet with a metallic substance, which by the aid of the forceps I withdraw with difficulty, and which, as you see, proves to be the rusty and corroded point of what was at one time an ugly, dangerous-looking bowie-knife. It is fully an inch and a half long and one inch wide at the base. It has lain imbedded in the joint of the old man's arm for thirty years, the source of all the pain he has suffered in that arm.

We cannot in a man at this age expect to secure a very useful arm. This wound will, however, I think, heal kindly, and he will have less pain, to say the least, than he has had in the past, which is a result not to be ignored.

As I explained to you last week the difference between a septic and an aseptic wound, you will at once recognize this as a septic wound, because septic materials are already present in it. As there are deep sinuses and pockets filled with this septic matter, you will appreciate the difficulty in getting rid of them. They are like yeast, if but a small number of these germs remain they will promptly multiply and infect all of the wound again. Notwithstanding this, however, we will use all the antiseptic precautions that we would if the wound were an aseptic one and will hope to get good union of the parts and a speedy closing

of the wound by nature. I will also place a drainage-tube in the bottom of the wound and the ordinary antiseptic dressing will be applied, and the patient will be removed to his bed in the ward.

December 15, 1888.

REVIEW OF SOME CASES OPERATED ON.

I want to show you to-day some of the cases on whom we have done operations, in order that you may be able to follow them to their termination. The first is the old gentleman 76 years of age on whom we excised the elbow for a stab-wound received thirty years ago. You will also remember that I removed the point of a dirk-knife from the wound which had lain imbedded there for all these years. The arm, as you see, might not be considered a useful arm, but it is still much better than it was before the operation, and he has no pain, which is an item to be taken into consideration. This is the oldest case of excision of the elbow of which I have any knowledge.

Another case I want to show you is that of the man for whom we excised a knee-joint in the early part of the course, this year. You see he is able to walk around and has a very useful limb. He will leave the hospital in a few days. You see, as I manipulate the limb, that there is perfect ankylosis at the knee, the tibia and femur are practically one bone. You have seen several operations of this kind this winter, and they are operations that I think we should feel proud of, because they are much better than amputation, leaving as they do limbs which are so much better than any artificial appliances.

March 2, 1889.

Before bringing a patient before you this morn-

ing, let me read to you a letter from our old friend Thomas Cavanagh, upon whom you saw me do excision of the knee-joint early in this session. I read this letter in order to make the history complete.

DuBois, PA., Feb. 26, 1889.

Dear Friend :—With the greatest of pleasure I must let you know that I am walking without crutches or cane. It was on the 5th of February that I walked. I was very much surprised at myself when I done it. From the day that you operated on my knee till the day I walked was 4 months and 8 days. How is that for an old man? Therefore I thank you most respectfully for your skillful operation on me. Doctor I must let you know that I have had no pain in it since I left the hospital, and if I live till the 4th day of July I will go and see you. You can use this letter any way you like.

Therefore I remain yours truly,

THOS. CAVANAGH.

Dr. J. B. Murdoch, Pittsburgh, Pa.

November 24, 1888.

As we are now studying the subject of fractures I embrace every opportunity to illustrate the different fractures of the bones of the human body to you.

FRACTURE OF THE LEFT LEG AND RIGHT THIGH.

The man we show you now is a railroad employé; yesterday while standing on a carload of gravel that was being pushed ahead of the engine, he suddenly became aware that the car was off the track; he signaled the engineer and endeavored to get the train stopped, but before he could do so the car went over an embankment, throwing him and the dirt down the hill. Just before going over the bank, however, he jumped, alighting on his toes, he says. He has sustained a fracture of the left leg and right thigh, and has a wound over the right patella. Whether

he received these injuries from jumping, or from being thrown, he does not know ; they were at all events probably caused by indirect violence. As he lies before you the first thing you will notice is that his right leg is everted. You also see some swelling. By measuring I find a little shortening of the right leg. He is unable to raise his heel from the table, and as I manipulate the limb I find a false point of motion about the middle of the thigh, so we have nearly all the symptoms of fracture of femur in history of the accident, deformity, swelling, pain, loss of function, false point of motion, but we have no crepitus. This is absent, possibly because the ends of the bone have overlapped or slipped past each other. This is often the case. We have abundant symptoms, however, on which to base a diagnosis of fracture, even if we do not elicit crepitus. We have made strong extension, but failed to bring the two ends together, but for all that it does not follow that they cannot be brought together, for although we may have applied extension to the amount of a hundred pounds and failed, still by *continuous application* of only eight or ten pounds for thirty-six or forty-eight hours, we may bring these fractured extremities into exact apposition. We do not, however, as a general thing, in a man of this age, expect so good a result as we would in a child, but are usually satisfied if we get strong union with a little shortening. This right leg was dressed with weight and pulley, and Hamilton's splint, which extends from the axilla to the sole of the foot, with a small piece extending out at right angles about six inches from the side of the splint ; this is to prevent eversion, or rolling out, or rotatory deformity of the limb. By a bandage around the upper end of the splint and around

the body of the patient he is prevented from rising, thus securing quiet and rest. The left leg you see is also broken below the knee, and by the amount of motion we know that both bones are broken. Here, too, we are able to secure almost all of the symptoms of fracture, including crepitus. Shortening, however, is absent, but when both limbs are fractured we have no fixed point from which to calculate, hence shortening becomes of no value as a symptom in this form of fracture. Over the spine of the tibia you see quite a large bleb. Where you find these you must expect to find a low state of vitality and an impaired nutrition; and you must be very careful about applying tight dressings or bandages, or you will surely have gangrene in the extremity of the limb. A question might arise in regard to the treatment of these blebs. Some surgeons recommend that they be opened at once. I never open them. I think that the cuticle heals better under the epidermis than it would do if it were opened and evacuated. My usual mode of treating fractures of this kind will be practiced in this case. The leg will be kept in the fracture box for a week or ten days, and then a plaster dressing put on.

A COMPOUND FRACTURE.

I will next show you the compound fracture which you saw us dress two weeks ago. We have failed to get these fragments to unite, and have been unable to bring them into apposition; there is either a tendon, muscle or piece of bone in the wound preventing union. I propose, to-day, to cut down on these fragments and saw off the ends of the broken fragments, bring them into close apposition and wire them together. Then by diet, regimen and good constitutional treat-

ment generally, we hope to get union and repair here. You see the bone protruding through the skin, and entirely denuded of periosteum; this I will saw off. I have tried so often to impress upon you the dangers from compound fractures as compared with simple fractures, that I say now, that if you are ever able, by the use of lint soaked in compound tincture of benzoin, collodion or in the patient's blood, to convert a compound into a simple fracture, you have saved your patient much suffering and loss of time, and perhaps his life. But you will often meet with cases like this where you will have trouble in doing this, and you will also meet with other cases in which you will fail entirely.

In all operations on bones I think it a good plan to use an Esmarch bandage. I think it is more useful to the surgeon in these cases even than it is in amputations, but in compound fractures and in injuries where the vitality is low I never like to use it. I am always afraid to do anything that might interfere with the blood vessels leading to the part, and for that reason I would rather lose a little blood than to risk injury to the already devitalized vessels that must carry the material for the repair of the wound. By removing the fractured ends of this tibia I have been able to bring them into apposition, and now, for fear of having bowing of the limb, I will saw out a short section from the fibula. The limb will now be dressed in the usual way, and we will hope for the best for this man, although his limb is by no means yet saved.

December 1, 1888.

FRACTURE OF THE VERTEBRÆ.

The first case I will bring before you to-day is one of those cases of which we see too many in

this hospital every year, namely, fracture of one or more of the vertebræ. These cases are, in my mind, the most melancholy of all the cases we have to witness, and they appeal to the sympathy of every man of any feeling at all. If they were crushed and killed outright they would not, it seems to me, present half so sad a picture as they do in cases like this, with the lower part of the body practically dead and the upper part alive and well. They lie on their back, usually, until large bed sores form on their body and they die of exhaustion. This man was a coal miner, and while at his work in the mine, two or three weeks ago, a quantity of slate fell on him, crushing him to the ground and fracturing the vertebræ in the lower dorsal or upper lumbar region. This is the manner in which a great many of these injuries happen. This man also received at the same time a fracture of both bones of the leg three inches below the knee. These injuries of the spinal cord are somewhat allied to injuries of the brain, in so far as paralysis is concerned, although we do not have loss of consciousness, delirium and many of the other symptoms of compression of the brain. He has complete paralysis in his lower extremities, with incontinence of urine and fæces. In cases of this kind there is usually, for the first day or two, retention, followed by incontinence of urine. This was the case in this man. He has all the power in his upper extremities he has ever had, he can roll his head about, flourish his hands and arms in the air, and almost raise himself to the sitting posture, but he is as powerless to raise a foot from the bed as though his two legs were separated from his body. He is also unable to feel me pinch his legs or prick him with a pin. He has paralysis of both motion and sensation. As we

turn the man over you see two large bed sores almost covering his entire buttocks, which have formed in the short space of three weeks. When you have a patient that you know must lie in bed for a long time, much benefit may be derived from washing the parts with alcohol every day. Some recommend alum water. This may be done before the ulcers form, but after the ulcers have formed the best thing you can do is to cover them with moleskin plasters or chamois leather, which may be spread with Peruvian balsam.

Now, while these kind of cases almost invariably die, there are exceptions to the rule. There was a man in the wards here about a year ago with just such a fracture as this, except that the deformity was more marked, and he had neither paralysis of motion or sensation, and in three weeks we put a plaster jacket on him and he soon after left the hospital alive and well. The only explanation in this case was that, although there was considerable deformity, it was not in the direction to make pressure on the cord. There are various treatments for these fractures, one of which is by extension and counter-extension, and this I think would have been good treatment in this man's case had it been resorted to early enough. Another mode of treatment is that of cutting down on the vertebræ and elevating the fractured portions, much the same as you would trephine the skull for pressure on the brain.

TREATMENT OF COLD ABSCESSSES.

We have another case to show you to-day, a man with two swellings on his back. His family history is of the best. About one year ago he received a blow on his back over the site of the upper swelling, and eight months ago he had pneumonia, for which his physician painted his

back with some substance, after which these swellings appeared. He had them aspirated and a pint of pus withdrawn. After this they again filled up, and I can now readily detect fluctuation, and as I press firmly on the upper swelling the fluid is all pressed out and distends the lower tumor, and I can then press it from the lower back into the upper tumor, so you see they communicate with each other. This is known as a cold abscess, and the contents of a cold abscess differ somewhat from the contents of an acute abscess, that from the latter being thicker in consistency, or creamy and more like normal pus, while that from the chronic form is more fluid or liquefied. In children this matter is likely to form near the vertebral column, and following the course of the psoas muscle point in the groin. A very superior manner of treatment of cold abscess, in my mind, is that invented by a German surgeon, namely, to evacuate the abscess thoroughly, by means of the aspirator or trocar and canula, then inject into it an ethereal solution of iodoform. The ether evaporates, or diffuses, through the cavity, carrying the iodoform into every pocket, sinus and crevice in the cavity, thus acting as a most thorough antiseptic. This is the treatment I propose to give this case. In passing the trocar I select the most dependent point, because it is here that I am most certain to empty the cavity most thoroughly. This is a good rule to which there are many exceptions, however. In many abscesses you would have to go through a great mass of tissue, in order to open it at the lowest point. In these cases I would advise you to open at the thinnest point, or at the point where nature would, unaided, have made an opening. I will inject two ounces of the ethereal solution of iodoform into this cav-

ity. It will then be left undisturbed for a few days, unless the temperature goes up, or other indications present themselves, showing that all is not doing well. If the temperature goes above 100° I will at once open the entire cavity freely, scrape it out with a Volkman spoon and drain it thoroughly, and treat it as an acute abscess.

December 8, 1888.

OPERATION ON A CRUSHED HAND.

The case which we will show you first to-day is one of those very frequent accidents that we see, namely, a railroad crush. This young man was following his occupation as a railroad brakeman, last Sunday, six days ago, when he had his hand crushed in the terrible manner which you see. He was brought here, but he stoutly objected to an amputation, and his father, who was with him, also refused to give his consent to an operation. He has, however, seen the error of his way, and now wants an operation done, and an operation that should have been done six days ago will be done now.

Amputations are divided into three periods in regard to the time of their performance, namely: the primary, the secondary, and the intermediate. In cases where a limb is hopelessly lost, all authorities now agree that the sooner it is removed the better. In these cases, in this institution, we operate at once, just as soon as the patient comes under our care; provided, of course, that he is not in profound shock, and not actually dying. And, by carefully examining the statistics of the hospital for the last twenty years, we find that the mortality is wonderfully decreased by so doing. And just here let me say, that the comparison of the records of other hospitals with the

records of this hospital shows that more amputations are done here, than are done in any other hospital in the United States; and further, that, according to the number of patients treated, more amputations are done in the Western Pennsylvania Hospital than are done in any other hospital in the world. This statement is the result of careful researches and examination of records and statistics of this and other countries.

Now, in cases of accidents, the question you will often be called upon to decide will be, "Is amputation required or not?" While we try to practice conservative surgery here, and try to teach you conservative surgery, we desire to teach you that *intelligent* or *practical* conservatism which is such a priceless boon to him who possesses it. To illustrate, you see the middle finger of this crushed hand. Although the bones are not broken, the soft parts are contused and lacerated almost its entire length. One kind of conservatism might save that finger. The man would be compelled to remain in the hospital for six weeks, then carry it in a sling for six months, and at the end of that time have a stiff, crooked, useless member, which would continually interfere with the performance of his duty, and perhaps in one year he would come back that we might remove the unsightly, useless member. This is not the conservatism that we would teach you. A member that is preserved merely to hang to the body of the patient as a useless, unsightly encumbrance, and to interfere continually with the proper performance of his duties, or station in life, does not exhibit the practice of true conservative surgery. I will remove the index and middle fingers of this hand at the metacarpophalangeal articulation, and in order to get skin enough to make good flaps, will saw off the head of the metacarpal

bones. This will leave the man a reasonably useful hand, because he has his thumb remaining, as well as his fourth and fifth fingers. I think that the loss of a thumb is almost equivalent to the loss of a leg, because the remaining fingers having no opponent, are thereby rendered almost useless also. This hand will be dressed in the usual manner, with antiseptic dressing, and we may bring him before you again.

EXCISION OF THE METATARSAL BONE.

We have another case here which will serve as an example, and a warning in regard to the care of the feet. This old gentleman is an Irishman 65 years old, a daily laborer, and resides in that odorous as well as historic locality known as "The Point," and within a short distance of old Fort Duquesne. He was a gay young man at one time, fond of dancing and of wearing tight shoes; and as a result we see such a deformity of his feet as it is but rarely our privilege to behold. His great toe lies almost transversely across the second and third toes, and these, together with the fourth toe, are all dislocated at their metatarsophalangeal articulation. The elastic spring of the foot is lost, and he walks on the base of the phalanges, over the site of which bunions have formed, which have become so painful that he can only walk with great pain and difficulty. In buying a shoe, the sole should be at least as wide as that of the foot. It seems that people will subject their feet to more pain and agony, for sweet vanity's sake, than they will any other part of their bodies. It is no rare thing to see women especially with narrow heels on their shoes, 2 inches high, not under the heel of their foot, but under the middle of their foot, and their toes all cramped down into the point of a narrow shoe,

causing corns, bunions, warts and deformities, and not unfrequently dislocating the tendon of the tibialis posticus muscle where it passes behind the malleolus; and not only all of these, but the general health suffers, because they who cannot walk cannot take that exercise so conducive to perfect health.

In recent deformities of this kind, or where the deformity is not great, no operation is required. In these cases Dr. Lewis A. Sayre puts a rubber stall over the toe, and to this attaches a strong piece of elastic rubber, and to this fastens a strip of adhesive plaster. The toe is then brought into line, and the plaster fastened to the heel, thus, through the elastic, keeping up a steady traction on the toe.

Now, we propose to do something to relieve this gay Lothario, and but one choice is left us, namely: excision of the metatarsal bone. There are two ways of doing this, however. One way is to open the joint and excise the head of the bone; the other way is to remove a piece from the shaft of the bone below the joint. I propose to open the joint and excise the head of the bone. There are two incisions that may be made here, a straight or an oval, but, as I think I can expose the head of the bone with considerable ease, I will make a straight incision. After the head of the metatarsal bone is removed and the toe brought into position, the base of the phalanx and the sawn surface of the metatarsal bone will be held in close apposition by wires passed through both bones. I will also excise the head of the second, third and fourth metatarsal bones. By a little attention the foot may now be made to present a reasonably good appearance. It will be retained in as good a position as possible by bandages, and in a few weeks this man will have less distress in walk-

ing, although he may still not have a perfect foot.

December 22, 1888.

I will show you first to-day the case in which we excised the head of the metatarsal bones of the first, second and fourth toes, two weeks ago. You remember the great toe lay directly across the ends of the second and third toes, and that the toes were all dislocated at their metatarso-phalangeal articulations. You see now that the toes all present a reasonably good appearance, and that the great toe is in a line with the inner border of the foot, as it should be. The original dressing put on this foot was not disturbed till the end of ten days, when it was removed and the condition you see here was presented. There is still a wire suture remaining in the wound, but if the wire does not disturb the man we will not disturb the wire.

OPERATION FOR TUMOR ON THE FACE.

The next case is one of tumor occupying the side of the face, or overlying the parotid gland. This man says that it has been growing for twenty years, but that ten years ago it was removed or partly so, but that it began to grow again, and has continued to increase slowly ever since. You can see the cicatrix where it was opened before. Now, the growths that may occur in this locality are various, as enlarged lymphatic glands, enlarged parotid gland, encysted tumor in the parotid gland—and this latter is what I believe this to be. If this is the case I will not likely be able to remove it whole, as it will likely rupture or tear, and the contents be evacuated. In that case I will make an effort to remove the sac by cutting, dissecting or tearing it out. If I am unable to do this I will simply cut off the outer portion, insert a drainage-tube, and sew it up. In removing tu-

mors it is always well to make a free incision through the skin, in order to give yourself plenty of room, then cut down carefully until you find the capsule and cut through it; however, as I do that in this case, the sac is torn and the contents which consist of a large amount of colored blood plasma. I find that the sac is very intimately attached to the surrounding structures, and that the parotid gland is involved in the mischief. If it were not for the long standing of this growth I would look upon it with suspicion, and as it is I am not satisfied that it is not a malignant growth. We will wash the cavity out with bichloride solution and provide free drainage, and make an effort to convert it into an abscess and prevent its return provided it is not malignant.

It is very unsatisfactory to begin an operation and not be able to finish it. You should never begin an operation with so much determination that you cannot stop, when you find that it is to your patient's detriment that you go any further. This is frequently done by surgeons, especially in laparotomies. They open the abdomen expecting to find a certain tumor, or condition, and failing to find what they expected, they cut, and probe, and search for what they wish to find, until they do irreparable injury to their patients. Always be prepared to end an operation when you find that you can do no more good, however unsatisfactory it may be.

FRACTURE OF THE TIBIA AND FIBULA.

We have here another case, a man with a fracture of the tibia and fibula, at their lower third. You see we have all of the symptoms of fracture here. Now this was done by direct violence (this man was struck with a stone) and is much more dangerous than if it had been done in jumping

from a heighth, or any other indirect violence. It requires a much longer time to heal. We had a man in the wards here last summer, who was struck with a brick, and it was six months before it healed. In cases like this, where there is so little swelling and tumefaction, it has been our practice to encase the limb in a plaster dressing at once, but it has been my fortune to see a good many cases of delayed union follow this practice, so I am beginning to look on it with suspicion. It may be that a sufficient amount of blood is not sent to the part under a plaster dressing, or that this dressing in some other way interferes with perfect union. I am, therefore, inclined to try the other way for awhile in cases of fractured leg from direct violence, or until the same bad results convinces me that the early dressing in plaster is not in some way responsible for the delayed union. This limb will, therefore, not be dressed in plaster for four or five days more. It is now two days since the accident occurred.

OPERATION FOR INJURY TO THE FOOT.

Another case is that of a boy who six months ago fell from a hay-loft, injuring his foot. The leg and knee soon became swollen, and when the swelling subsided the numerous openings you see appeared over the front part of the leg. These openings have a pouting appearance, peculiar to themselves, and they are called "cloacæ," from their fancied resemblance to the anus of the hen, they always lead down to dead bone. As I pass the probe down I come in contact with dead bone at once. You will also notice another defect in this leg, namely, that it is bowed outward. This is caused by the fact that part of the tibia has been lost through necrosis, and the entire weight coming on the fibula, it has given way, or bent

from the pressure, causing the bowing of the leg. Now we propose to cut down on the tibia and remove the necrosed bone, and in order to cause the sole of the foot to set flat on the floor we will fracture the fibula, and allow the fragments to overlap each other to a small extent, thus reducing the length of the fibula to that of the tibia. I will make an incision clear down on to the bone, then with a periosteum elevator, lift up and preserve the periosteum. You see that the tibia is separated at its epiphysis above the ankle, and with very little force I am able to remove a sequestrum about 8 inches long, and almost a perfect mold of the tibia, except where it has been destroyed by the disease. It is the most perfect specimen of sequestrum that I have ever removed from so small a limb. I will pack the cavity with iodoform gauze, and leave the lower one-third of the wound open for the purpose of drainage. The boy, I think, will have a reasonably good limb, although amputation of the limb was at one time considered necessary.

EXTIRPATION OF AN EYEBALL.

January 5, 1889.

I have a patient to-day for whom I will extirpate an eyeball. This, properly, should be done by the ophthalmologist, but as this is an operation which you may all be called upon to perform in your practice, I thought proper to bring the case before you to-day. Besides, if all the accidents to the eyes are given to the oculist, and the gynecologist does all the operations falling within his line, and the genito-urinary specialist is given all cases peculiar to his practice, and all the other specialists get their share, there will be but little left for the general surgeon. I, myself, am a special-

ist, and my speciality is, as Mr. Wilson once said, the skin, and all it contains. When the eye is hopelessly destroyed it should be removed. Because, in the first place, an artificial eye may be better worn, and in the second place, the inflammation and the pathological changes which are set up, are capable, by sympathetic action, of destroying the sound eye. And although the inflammation may be subdued for the time being, and the useless member allowed to remain, still at any time, and from slight provocation, a new inflammation may be set up and the sound eye be quickly destroyed. This man was struck in the eye by a piece of steel; six years ago, and had his eye destroyed. It did not, however, give him much trouble until within a few days, when a new inflammation attacked it, and which is now slowly invading the other eye. The man has applied to us for relief, and extirpation has been decided upon. In doing this the wire speculum is inserted to hold the lids apart. The conjunctiva is then picked up with a small forcep and cut clear around, near the cornea. The recti muscles are then all divided, as close to the sclerotic as possible, and the eye will then bulge forward. You then use a pair of curved scissors to cut off the optic nerve. Of course, when about to do the operation, you will be careful about the eye you are going to remove. Surgeons have been known to remove the wrong eye. This would be a great mistake. After the recti muscles are all divided you introduce the scissors, closed, and feel for the optic nerve. I prefer to introduce the scissors on the nasal side, as the nerve is nearer that than the other side. When you have found the nerve the scissors are opened sufficiently to grasp the nerve and snip it off, as I do here. After the nerve is divided the oblique muscles still remain, which I will divide

close to the sclerotic, when the globe is removed with ease. The eye should, where possible, be removed before the humors are allowed to escape, as it is done with less facility when emptied of its fluid. If there is any bleeding in the wound a little water usually controls it; if not, then a cotton compress held in the socket by a bandage is sufficient to control any hæmorrhage there is likely to be. In about three or four weeks this man can be fitted with an artificial eye. He will for the present be kept quiet and his eye kept bandaged.

AMPUTATION OF THE LEG.

We will next show you a boy for whom I amputated a leg just twenty four hours ago. There has been some rise of temperature, and some soiling of the dressings, so I will take the dressing down and ascertain, if possible, the cause of this disturbance. As I inserted a rather large drainage tube I will now remove it. I think that by this time the serum is all drained from the wound, so that it will not suffer by the removal of the tube. The wound will then be redressed and not disturbed for two, three, or perhaps for four weeks, unless another rise in temperature should indicate that all is not going on well. A large amount of dressing should be placed over wounds like this, so as to absorb all the fluids that may come from the wound, because the moment that the blood shows itself on the outside of the dressings the danger to septic infection at once begins, as the germs more easily penetrate the dressing. It is for this purpose that we use such large amounts of absorbent cotton. And in regard to bandages let me say here, that the ordinary crinoline bandages are the best for wounds like this. When applied wet they adapt themselves

nicely to all inequalities of the surface and when they afterward become dry the sizing which is contained in their meshes acts in a modified degree like the plaster in a plaster dressing, making a firm and altogether very excellent dressing. For fractures where you wish to hold parts in apposition, or where you wish to retain splints, or make pressure, the ordinary unbleached muslin makes better bandages. This wound will now be redressed, antiseptically, much the same as an original wound, with the exception of a drainage-tube, and we anticipate no more trouble from it.

January 12, 1889.

AMPUTATION OF THE FORE-ARM.

We have a patient here this morning who has had his hand traversed by a car-wheel. This happened about two hours ago, and illustrates, very forcibly, the condition in which you will find a limb after an accident of this kind. You will frequently hear people say when they see a contused limb that, "it was merely grazed by the flange." Now this is an impossibility. I think that all of you know that the flange of a wheel is on the inner surface of the wheel, and travels along the inner edge of the rail, so that in order to be "grazed by the flange" the limb must be traversed by the tread of the wheel, or his body must be entirely under the car. A limb may also be caught and pushed along in front of the wheel, for a short distance, and then thrown from the rail. This may cause a very extensive contusion, so that you may even be at a loss to know, whether, or not, the wheel passed over the limb. This you may always ascertain by examining the bone, which you will find crushed, and finally comminuted where traversed, by the wheel, but where the limb has been merely shoved in front

of the wheel, and thrown from the rail, you may find the bone fractured, in several places perhaps, but you will not find it crushed into fine fragments.

Before the days of antiseptis, we used strips of adhesive plasters in dressing these wounds, we formed our flaps, placed a few sutures, then covered the stump with adhesive strips. We do not use the plasters now, but we sew up our wound a little more carefully. One reason why we do not use plasters is because they make a filthy dressing, and another is, because of the septic material in the plaster. In those days we shaved the limb, carefully to facilitate the removal of the plasters, we still continue to shave the limb, not so carefully, however, and principally for the sake of cleanliness.

In amputations of the forearm, I prefer the modified flap operation. You grasp the limb between the thumb and forefinger, of your left hand, at the point where you intend to saw the bone off. You then make your flaps by making incisions between the points where your thumb and forefinger rest, on the limb. You then dissect up the skin, turning it up as you would the sleeve of your coat. I also like to include part of the muscle, because if you dissect the skin up by itself, you sever all of the little vessels that go to its nourishment. I prefer the modified circular operation, because you cut the arteries at a right angle, and you make a less wound in the skin. After you have turned the skin up sufficiently, you make a circular incision of the muscles, cutting everything down to the bone, then pass the knife between the bones, cutting the interosseous membrane. You then saw off the bones, and there is a right and a wrong way to do this. I begin by placing the heel of the saw on the radius,

then draw it back, making a track for your saw. After your saw is well started in the radius, depress the handle and make a start in the ulna, then return and sever the radius, and last of all the ulna. Do not saw rapidly as the ends of the bones may be burned by the friction of the saw. Bite off all sharp angles or points of bone, with the bone forceps. In controlling hæmorrhage, I twist large arteries, and for capillary oozing, hot water is generally sufficient. A drainage tube is then inserted, and the wound is closed. In wounds like this, I like the seamstress' stitch; do not make the mistake of using the glover's stitch, or the stitch used in sewing covers on balls, for seamstress' stitch; if you do, you will not bring your edges into close apposition. Do not sew up a wound too tightly. Always make allowance for more or less effusion and wound tension.

OPERATION FOR FISTULA IN ANO.

We have another case to show you, that of a man with a fistula in ano. These, as you know, are caused by traumatisms, foreign substances in the rectum, and various other ways. An abscess first forms in the vicinity of the anus, pus accumulates and travels in the direction of the least resistance, which is usually in the direction of the rectum, although they also frequently open externally. After they have once opened into the rectum, the irritation from fæces entering the canal, together with the movements of the bowel, and the contractions and relaxations of the sphincter ani, interfere continually with repair, and they do not heal until the sphincter ani is divided.

You notice about this anus a peculiar growth, resembling somewhat a rose in appearance, then a condylomata, or mass of syphylitic warts. These

must be handled with great care, as they possess the power of innoculating syphilis through a wound in the skin, or through an abrasion on the hands of the operator. You also see an opening in the skin on the left of the median line, and two inches from the anus. This is the external opening of the fistula, a grooved director passes in at this opening, and readily passes through and out at the anus. The director now lies in the track of the fistula, and with a scalpel I will incise all of the tissue that is lying over the director. This constitutes the operation for fistula in ano.

I find another small opening in the skin, on the right hand side of the median line, and about two inches from the anus. In this case I am unable to find an internal opening, but as the part is all undermined here with pus, I will make an internal opening, by forcing the director through into the rectum. This side will be incised as was the other. The after-treatment of these wounds, will be of more importance, than the operation. They must be kept thoroughly cleansed by frequent washings with antiseptic fluids, and they must be kept packed with iodoform gauze, in order that repair may take place from the bottom. These condylomata will be removed by the scissors, and their seat cauterized, and when they begin to granulate they will be occasionally touched with nitric acid, nitrate of silver, or other caustics. This man will be put upon proto-iodide of mercury, which will be pushed until his gums are slightly touched, and if he does not improve on this he will be given mixed treatment. A favorite plan of mine is to take a piece of blue ointment the size of a chestnut, and rub it into his back, and repeat this each evening. This, together with the exhibition of iodide of potas-

sium internally, I consider an excellent mode of treatment.

January 19, 1889.

OPERATION FOR HARELIP.

I have to-day a case of harelip to show you. The patient is a boy about 6 years old, and is brought here for operation by his father. Besides the harelip, he has a cleft of the palate. Instead of the double fissure in the lip as is often the case, he has but a single fissure, and where this is the case, it is almost always on the left side. You have seen Professor King operate on several cases of harelip during this term, but my manner of operating is somewhat different from that of Professor King. As a preliminary step I pass a loop of string, or ligature, through the lower angles of the lip, on either side of the cleft, not for any part it takes in the operation, but for the purpose of holding the parts out of the way. This is better accomplished in this way, than it could possibly be by the aid of forceps. I then dissect the lip loose from the superior maxillary bone, on either side of the fissure, so that they may be drawn together with greater facility, in closing the fissure. The next step in the operation, is to pare or denude the edges, that are to be brought into apposition. This is done by transfixing the lip just at its vermilion border, or just where the skin and mucous membrane meet. This should be done with a narrow, straight bistoury. The incision should then be carried well up to the nostril or to the extreme limit of the fissure, then cut off. The other side of the fissure, is then to be treated in like manner, and the two thin strips that have been pared off brought down so that they hang in front of the mouth. This constitutes the third step in

the operation, and the loops through the angles of the lip, having subserved their purpose, are now removed. The lips having been previously dissected loose from the superior maxillary bone, are readily brought together, closing the wound. Here also surgeons differ, in the manner of retaining the parts, some prefer the wire suture, passed through the lips, while others prefer the silk or horse-hair ligature. For my part I prefer the harelip pins and a cotton cord ligature. I prefer the cotton ligature, because it is a little more elastic, and a little softer, and not so likely to cut into the tissues. The first pin is passed just at the vermilion border of the lip, it should go deeply into the tissues of the lip, but should not include the mucous membrane of the mouth. It should pass across the wound, and emerge from the skin, at a point corresponding exactly with the point of entrance on the opposite side. The other pin is passed in like manner, near the upper border of the wound. It is not necessary to wait, for the hæmorrhage to cease entirely. Bringing the parts together with the pins, is usually sufficient to stop the hæmorrhage, if any remain.

You now notice a projection downward in the line of the wound. This is caused by union of the two strips pared from the sides of the fissure, and they will be made to fulfil a good purpose here, because in a great many of these operations a notch is left after the wound heals. In this case, part of this projection will be left here, so that after repair has taken place, enough of it will remain, to prevent a notch being formed. Now in addition to the two pins, I will put a wire suture through the wound, for additional support, and two or three sutures of fine silk, through the mucous membrane of the projecting part, to hold

it in apposition. The pins should not be allowed to remain too long, or they will leave marks, after the wound has healed; on the other hand, if they are removed too soon the wound may come apart, so it is a very nice point to know just when to remove them. Mr. Holmes asserts that he removes the pins in twenty-four hours, while others allow them to remain for several days. There is no rule in regard to this, but they should be removed as soon as they can be dispensed with. I cut off the heads, and points, of the pins, and to prevent the projecting parts from sinking into the skin, I put small bits of plaster under them. For additional support, I draw narrow strips of adhesive plaster over the wound, from side to side.

THE OPERATION OF CIRCUMCISION.

I have another case to show you to-day, that of circumcision. It is said that this operation was first done by Moses, but I believe that it was done in Arabia, long before the time of Moses. At all events you know that there are fashions in surgical operations, as well as in the cut of your wearing apparel. This operation seems to have again come in fashion, within late years. A long prepuce of course is an annoyance, to a man all through life. Besides that from phimosis, and paraphimosis, it is exceedingly filthy, and frequently leads to disease. There is, however, some points in favor of the long prepuce. It was put there for some good. Without it the meatus may become contracted from friction with the clothing. In covering the glans it serves to keep that part more tender, and sensitive, thus rendering copulation more desirable, and conception more certain. Therefore I think that the operation should not be advised unless there be some

good reason for it, other than that of being in the fashion.

This boy, about 15 years old, has been in the medical side of the hospital for some time. A few weeks ago, it was noticed that he became nervous, restless and sleepless. Later he became delirious, which continued until he had to be confined to the cell. An examination showed that he had a very long prepuce, and phimosis. I do not know that this is the cause of his nervous trouble, but our reason for doing the operation is based on sufficient absolute authority, to justify us in doing it. Do not think, however, that every boy with a long prepuce has phimosis, or even an abnormality. This is the normal condition in young boys. In doing this operation, it is well to make a mark with ink at the point where you intend to divide the foreskin. The part is then placed between the blades of Ricord's forceps, and all in front of the forceps is cut off. The skin is then reflected behind the glands, but the mucous membrane will remain. This is then cut or torn, and reflected back with the skin. The skin and mucous membrane is then sutured together, and this is usually done with the horse-hair suture. In the Jewish rite, the Rabbi does not sew the skin and mucous membrane together, and I would not advise you to do it, in very young children. This constitutes the operation. This boy will be given medical treatment, and it remains to be seen what effect it will have on his reason which, as I told you, is entirely lost.

February 9, 1889.

THE TREATMENT OF HÆMORRHOIDS.

I have a patient to show you to-day with that very prevalent disease, namely, hæmorrhoids. Now as you know there are two principal varie-

ties of hæmorrhoids, the internal and the external, and those two varieties have their seats in the two plexuses of hæmorrhoidal veins. The inferior plexus is situated just within the sphincter ani, and empties its blood into the illiac veins, and then through the inferior vena cava to the heart. The superior plexus is situated about one inch above the inferior plexus, and empties its blood, via the portal system, into the liver, and thence through the vena cava to the heart. The causes of hæmorrhoids is the same as that of varicose veins in any other part of the body, and that is obstruction to the return circulation; this may result from various causes, as abdominal tumor, gravid uterus, constipation, impaction of fecal matter in the rectum, being constantly on the feet, together with many other states and conditions of the system. External piles are at first the same as internal piles, but from constant congestion and by being repeatedly forced down in defecation, they become as it were strangulated in the rectum and the blood becomes organized, into forming small tumors which sometimes appear as little tags, around the verge of the anus.

It is said that man is the only animal that is subject to piles, a penalty apparently for his being in the erect posture. The treatment is paliative and curative. The paliative treatment consists in removing obstructions to the return circulation and stimulating a torpid liver when this condition exists. A favorite laxative with me is that known as Van Buren's mixture which is as follows:

R. Magnesia sulphas,
Potassii bitartras,
Magnesia carbonas,
Sulphur sublimat, ãã equal parts.

Mix et signa one heaping teaspoonful in water before breakfast.

This mixture, taken in this way, keeps the bowels in a softened and moistened condition and favors peristaltic action. The curative or radical treatment consists in operative measures. In external piles where they appear as little tumors or tags, you may snip them off with the scissors, or a scalpel; there is very rarely any hæmorrhage, and when there is it is easily controlled, as the bleeding point is under your eye. Not so, however, with internal piles; in these the vessels may be large and not so readily accessible, and patients have been known to bleed to death before these vessels could be controlled. In dealing with this form of piles we use the clamp, the cautery, or the ligature. In using the clamp, the pile is caught at its base, between the jaws of the clamp, tightly compressed, then cut or shaved off, in front of the clamp, and the cut surface or stump seared with the actual cautery; this is Mr. Smith's operation, and the clamp is called Smith's clamp. Another and a more recent operation consists in injecting the pile with carbolic acid. This operation originated among men outside of the profession, or irregulars; it sometimes acts very effectually and with so little pain or inconvenience to the patient, that the regular profession are now giving it a trial. This is not the first case, either, in which the profession has received valuable hints from charlatans. Mr. Heaton's cure for hernia, by the use of white oak bark, originated in the same class of people, and the fact that we accept and use these hints, merely shows that we, as a class, are not bigoted, obstinate, nor old fogies, but are willing to accept any thing, from any source, that offers good to our patients.

The patient requires to be prepared for this operation, the bowels should be unloaded by a

cathartic the day before, and an injection should thoroughly cleanse out the rectum a few hours before the operation ; the external surface should also be thoroughly washed with soap and water. I propose to inject these piles to-day with carbolic acid and the solution I prefer consists of the following :

R. Ac. carb ʒss.
 Glycerine, }
 Aqua, } āā ʒj. m̄

The needle is then made to pierce each pile and four or five drops of the solution left as near the centre of the pile as possible. In order to deaden the sensibility to pain which sometimes follows the injection of the acid, I will first inject ten or fifteen drops of a 4 per cent. solution of cocaine. After the injection of the cocaine, the needle is allowed to remain in the pile about two minutes, while the syringe is removed and filled with the acid solution, and again attached to the needle and the acid injected. Shortly after the injection of the acid the pile turns to a purplish or bluish color and becomes hard. A compress is applied over the anus retained by a T bandage, the patient is put to bed and given a quarter of a grain of morphia, and the pile soon shrivels up and disappears. To-morrow the patient will be allowed to walk about the ward, and in a day or two can go about his business.

Some precautions are always advisable in doing this operation ; after you have dilated the sphincter ani, and brought the piles into view, it is always well to pass a small sponge with a string attached into the rectum, to prevent feculent matter from coming down to interfere with the operation. It is also necessary for you to lubricate all the surrounding tissues, to protect them from any of the acid that may be dropped on them. I

would also suggest that you do all as humanly as possible; do not cause your patient unnecessary pain. I think that surgeons get careless about this sometimes. I am sure that if it was their own case they would be more careful. As I said, this operation is only on trial yet. In my hands it has not yet yielded very brilliant results, and I do not believe that it is as efficient or as certain in its results as our old plan of operating.

POTTS' FRACTURE.

I have another case to show you, one of interest, and one that affords me an excellent opportunity to speak to you on the subject of Potts' fracture. This is an exceedingly common form of accident and one which you may be called on to treat during the first months of your practice. It consists of a fracture of the fibula two and one-half inches above the ankle joint, together with rupture of the internal lateral ligament and frequently the internal malleolus is fractured off and dislocated inward with the foot and astragalus. It is caused by a violent turning of the foot outward; the patient falls from a height, striking on the inner side of his foot; the foot is strongly everted and the entire weight of the body coming on the internal lateral ligament, it ruptures or fractures off the internal malleolus; the whole force is then directed against the external malleolus forcing it outward.

Now, the fibula you know, is attached to the tibia by means of the interosseous or tibio-fibular ligament. With strong pressure forcing the lower end of the bone outward, the bone is made to act as a lever, with the ligament acting as a fulcrum, and the fibula gives way and is thrown against the tibia. The bones may be forced through the skin, constituting a compound fracture, and the

joint may be thoroughly disorganized, making it a compound complicated fracture. There is increased mobility; the lower end of the tibia or the internal malleolus forms a prominent projection inward. At the seat of fracture of the fibula a depression exists, as there also is where the internal malleolus is fractured off; and you will see by looking at this patient's foot that the joint has a "spread" appearance. The object of treatment is to prevent the foot from remaining everted, the tibia and fibula must be made to grasp the astragalus and then be retained in that position. For this purpose many splints and appliances have been devised. It is not sufficient that the foot be made straight, it must be held in an inverted position. In this hospital we use the plaster dressing, and I had intended to apply that dressing to this limb in your presence to-day, but as you see, the limb is too much swollen and congested, so we will defer that operation and show you a fractured humerus.

TREATMENT FOR FRACTURES OF THE HUMERUS.

We have a patient here who had his humerus fractured by direct violence on December 7. He remained in the hospital for about four weeks, when he went about his business. Shortly afterward when alighting from a moving car he had his arm twisted, refracturing his humerus at the same place by indirect violence. I would like to say a few words here in regard to the treatment of fractures of this bone. We more frequently have non-union of fractures in this, than in any other bone in the body, and especially if it be fractured about its middle, and this, I think, is from faulty treatment, from not retaining the fractured extremities in apposition. We may be able to reduce the fracture, and we almost always do; but

do we retain it in position, do we immobilize it? I think that we frequently do not. The arm is an exceedingly difficult extremity to keep perfectly quiet; patients will move the arm more or less in spite of themselves. It has long been a rule in the treatment of fractures that the joint nearest a fracture be confined, or rendered immobile; this I consider good practice in the majority of cases, but I think there are exceptions to it, and the case of a fracture at the middle of the humerus, I think, is an exception to the rule; because, if the arm cannot be kept at rest and the elbow is firmly confined, then the motion must take place at the seat of fracture; therefore I do not fix the elbow, and I believe that to be the proper treatment. This, however, only pertains to fractures of the shaft. When the fracture is through, or near the condyles, then, of course, it is preëminently necessary to fix the elbow. Acting on my convictions therefore, I propose to apply to this fracture a short anterior and a short posterior splint, and a shoulder cap.

February 23, 1889.

GUNSHOT-WOUND IN THE LEG.

I have a patient here to show you to-day, a boy of 14 years of age, who two weeks ago shot himself in the leg below the knee with a small rifle, known as a target, or Flobert rifle. He at once applied to a physician, who was evidently a sensible man, inasmuch he at once endeavored to render the wound antiseptic; but who again was not as sensible as he might have been, because he probed the wound. He did not find the ball either, a usual result in such cases. The boy then came to the hospital and was not probed here, and the ball still remains in his leg; and as you see he does not suffer any inconvenience

from it, he walks well and feels no pain. This should be a very instructive case to you, because it will serve to illustrate the folly of probing for bullets, in gun-shot injuries. A great surgeon has divided gun-shot wounds into two great classes, namely those that have been fingered, and those that have not been fingered. The greatest damage that a bullet can do is done in its passage through the body, it being surrounded by fire from the discharge of the powder and its rapid flight through the air, have rendered it aseptic, and the wound it inflicts will therefore be aseptic, and you know that the tissues are very tolerant of metallic substances; you know this from seeing us day after day inserting metallic sutures into almost any and every tissue of the body. You also know that men have carried needles, bullets and other metallic substances in their bodies for years without inconvenience. It is said that Andrew Jackson carried a bullet, received in a duel, in his body for twenty years, with little or no pain or inconvenience. You know therefore that bullets are in many cases aseptic, and innocuous, and that by probing the wound with a foul finger, or a dirty probe, you may carry germs into the wound, thereby rendering the wound septic and doing your patient irreparable damage. There are, however, cases in which it becomes absolutely necessary to remove the bullet, as where it rests in a vital part, or against a nerve. And where you do probe a wound, you should do it strictly, antiseptically, cleanse the surrounding parts, cleanse your hands and probes in antiseptic solutions and never pass a probe into a gun-shot wound in search of a bullet until you have everything in readiness to remove the ball if your probe should come in contact with it. Otherwise the information gained

by probing will be lost, and you will have done an unwise act. Never do anything, until you are prepared to do everything, is a good motto in these cases.

Dr. Park, the distinguished Buffalo surgeon, relates a case of a young man, a laborer in a freight yard, being accidentally shot in the region of the nipple, a number of surgeons gathered at once and began probing the wound. When Dr. Park arrived he was assured by one of the surgeons, (who triumphantly exhibited his probe), that he had passed his probe into the man's body to the extent of three or four inches. He was asked if he found the bullet, and replied he did not. Dr. Park then suggested that they make a thorough examination of the body, and on turning the man over, they found another wound, at the lower angle of the scapula; the wound of exit of the bullet. And these surgeons had been diligently probing for a bullet that was not in the man's body, but that had gone flying far out in the freight yard. And suppose they had succeeded in locating the ball in the body, their information could have availed them nothing, because they were not prepared to remove it. Dr. Park relates another case, of a surgeon passing a probe into a man's brain, in search of a bullet, when the information could have been of no value whatever to him, because he was not prepared to remove it, and he was already aware that it was in the brain, because brain substance was oozing from the wound behind the ear. I hope now that you all see the folly of such proceedings and not only the folly but the danger. You not only render the wound septic, but you may disturb clots and cause hæmorrhage, which may cost your patient his life. Now let me tell you the proper thing to do in these cases. First

occlude the wound with some antiseptic material, cotton wool or soft cloth saturated in any antiseptic fluid, will answer the purpose very well, then if it becomes necessary to remove the ball, transport your patient to a place where you can have all the requirements and appliances for removing the ball before you begin to probe, and be sure that the ball is still in the patient's body before you do any unnecessary probing. Also bear in mind that bullets almost always deviate or are deflected from their course; do not try to force your probe in any direction, but allow it to follow the course of the wound slowly and carefully, which it will sometimes do almost by its own weight.

February 16, 1889.

AMPUTATION OF HIP-JOINT.

I have a patient to bring before you to-day who has come here seeking relief from a most grievous condition. He has traveled throughout this and other States in search of relief and hoping to be rid of his malady, but in each and every case to be turned away in despair by surgeon after surgeon telling him that there was no relief for him, and that his case was hopeless. Three years ago this man was a blacksmith and was kicked on the leg by a horse. Soon after a small lump appeared, which grew, at first slowly and hardly perceptibly, later it grew more rapidly, and within the past year it has grown with frightful rapidity, and is now so large as to keep his legs separated and to interfere considerably with his powers of locomotion. I consider this a more than ordinarily sad case. When great men like President Lincoln, President Garfield, Gen'l Grant or Emperor Frederick, are stricken down and death seems inevitable, and

the best surgeons of the country take up their post by their dying bed, all the world looks on aghast and cries out that men who will thus stand face to face with death are brave men—and so they are. But men like President Lincoln, General Grant or Emperor Frederick have climbed the ladder of fame, they have attained the highest position in the gift of the people of their respective countries, they have shone in their greatest glory, they have accomplished their greatest good. Such men as these have generally passed the meridian of life, they are in the decline.

Here is a man not yet 30, comparatively a young man; strong, healthy, robust, recently married and the father of one child; prospects and opportunities for future good just looming up before him, when just in the prime of life he is suddenly stricken down by a disease, probably cancerous in its nature and as deadly in its characters as the assassin's bullet, if allowed to pursue its rapid onward progress.

What will be required here it is impossible to tell; the operation is in a manner an exploratory operation—it may involve the removal of an immense tumor or it may involve an amputation at the hip-joint. The patient is reduced in strength and may not survive the operation long enough to be removed to his bed in the ward. It is with a sense of grave responsibility that I approach this operation. These are the cases that will test your skill, your knowledge and your courage. An operation is, however, the only chance that remains for the patient, and it is a duty which no surgeon should shirk. As I have said, he has consulted many physicians, and their opinions have been various. Some diagnosed abscess, others lymphoma, lipoma, sarcoma, and many other states and conditions. I am

of the opinion that it is a sarcoma, or an osteosarcoma. Now sarcomata, as you know, are cancerous in their nature and prone to return, and a very good rule in surgery is that, where sarcoma attacks a bone, the whole bone should be removed.

A few years ago a lady suffering from an osteosarcoma which had attacked the femur just above the knee, applied to me for relief. I amputated the limb at the upper third of the thigh, thinking that at that point I would certainly be in sound tissue. The patient made a good recovery, but after six months the disease returned with all its virulency, and then I wished that I had removed the limb at the hip-joint. I would therefore advise you that, in all cases, where sarcoma attacks a bone, to remove the entire bone; always go to the joint next above the seat of disease. Sarcoma, as regards the form of its cells, is of three varieties, *i. e.*, the round-celled sarcoma, which is the most malignant in its nature; the spindle-celled sarcoma, which next approaches it in malignancy; and the giant-celled sarcoma, which is the least malignant. They are all, however, likely to return after removal, unless they are completely eradicated by a most thorough operation. Inasmuch as this has been diagnosed an abscess by some surgeons, and in the hope that they may be right, I will insert an aspirator needle well into it and see what we may be able to obtain. You remember that the history of this case was that at first it grew slowly but as it grew in age it increased in the rapidity of its growth, and now has attained a size exceeding that of the foetal head. No fluid can be induced to flow through the aspirator, although the point of the needle is movable and feels as though it were in a cavity. I will therefore prepare to remove the tumor or amputate the limb at the hip-joint, as may be required. I elevate the

limb to a right angle to the body and carefully endeavor, by stroking the skin from the toes toward the body, to drive the blood from the limb. I will apply an Esmarch's bandage the entire length of the limb, pass it around the perineum and carry it well up over the crest of the ilium. A roller bandage will serve as a compress to control hæmorrhage from the external iliac, while the other end of the rubber bandage will compress the branches of the internal iliac which have an exit from the pelvis at the great sciatic foramina. An assistant will make steady traction on the ends of the rubber bandage. This method of controlling hæmorrhage in amputation at the hip-joint was first introduced by Mr. Lloyd, of Birmingham, England, and has proved a very efficient method.

As I make an incision and pass my finger into the tumor I at once find a cavity with firm walls and filled with blood clots and a soft encephaloid or brain-like substance, which oozes through the wound. I find the limb is excavated or honey-combed almost throughout its entire thickness, the cavity extending across the bone into the outer side of the leg. It also extends upward, involving the capsular ligament and the joint. In view of the fact that the disease has gained such a foothold, and that the destruction of tissue has been so great, no operation can prove of any avail for this man except the amputation at the hip-joint. In this opinion I am sustained by my colleagues, Drs. McCann, Hamilton and King. Even this, I fear, will be but a respite or prolongation of the man's life, but as it is the physician's province to prolong life, we are justified in making the attempt, however desperate may be the chances. The limb being now removed is not sufficient; all of the diseased tis-

sue remaining in the stump must be dissected out, or a speedy return of the disease would result. In deference to the general opinion we will not trust to torsion, in this case, to control the hæmorrhage, but strong catgut ligatures will be used. All of the hæmorrhage must be controlled before the wound is closed, for fear of hæmorrhage into the wound, causing wound tension. A rather large sized drainage-tube will be inserted and the wound will be closed by silver sutures. The usual antiseptic dressings will be applied and the patient will be at once removed to bed. Stimulants, such as brandy, whisky and ammonia, will be given to him, and he will be surrounded by bottles of hot water, in order to assist reaction. If he does well, the dressings will not be disturbed for several days, at which time the drainage-tube will be removed.¹

¹ March 9.—This patient lived for three weeks and died suddenly from secondary hæmorrhage. A postmortem examination showed that the carcinoma had extended into the pelvis, and involved the common iliac artery.

